

Studies on some spiders of the genus *Pardosa* Koch
from India (family : Lycosidae)

B. K. TIKADER AND M. S. MALHOTRA

Zoological Survey of India, Western Regional Station, Poona 411005

(Communicated by Dr. T. S. Mahabale, F.A.Sc.)

MS received 26 April 1975; after revision 8 December 1975

INTRODUCTION

THE spiders of the family Lycosidae are moderately known from Indian fauna. Simon^{1,2} described some species of Lycosidae from India. The classical work of Pocock³ on Indian spiders contains only 20 species belonging to nine genera of the family Lycosidae. Subsequently Gravely⁴ and Sinha⁵ described 21 species, mainly of the genera *Hippasa* Simon, *Lycosa* Latreille, *Pardosa* Koch and *Venonia* Thorell. Recently Tikader^{6,7,8} recorded a few new species of this family. So far only seven species of spiders of the genus *Pardosa* Koch are known from India.

While examining the spider collection received from Northern Regional Station, Dehra Dun; High Altitude Zoology Field Station, Solan and Central Regional Station, Jabalpur of the Zoological Survey of India, we came across five new species of spiders of the genus *Pardosa* Koch of the family Lycosidae, which are described in this paper and key to the new species is also given.

All type specimens will in due course be deposited in the National Zoological Collection, Zoological Survey of India, Calcutta.

GENUS *Pardosa* KOCH

1848. *Pardosa* Koch, Dic. Arachnide, 14 (3): 100.
1897. *Pardosa*: Simon, Hist. Nat. Araignees, Paris, 2: 361.
1924. *Pardosa*: Gravely, Rec. Indian Mus., 26: 609.

CHARACTERS: Cephalothorax very high mainly in the head region and chelicerae much smaller than in most other lycosids. Cephalic region almost entirely occupied by posterior two rows of eyes. The anterior row of eyes shorter than the second row. Labium usually wider than long. Legs relatively long and thin, and with very long spines. Tibia plus patella IV

usually longer than the carapace, and tibia I provided with three pairs of ventral spines.

TYPE-SPECIES: *Pardosa striatipes* Koch.

DISTRIBUTION: Europe, America, Asia.

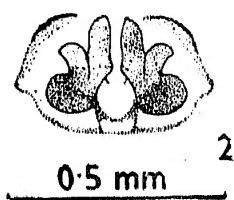
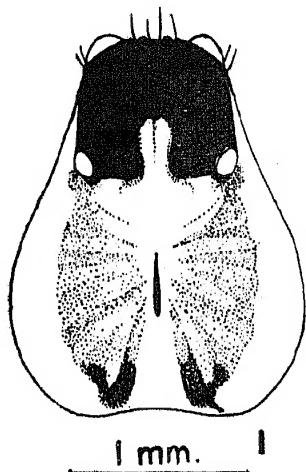
KEY TO THE NEW SPECIES OF THE GENUS *Pardosa* KOCH.

1. Spider of small size. Total length not more than 6 mm. 2
Spider of bigger size. Total length more than 6 mm. 4
2. Sternum uniform pale in colour and abdomen provided dorsally with chalk white patches *amkhasensis* sp. nov.
Sternum not uniform pale in colour and abdomen not provided with chalk-white patches 3
3. Sternum provided with a conspicuous dark brown 'V'-shaped mark *minutus* sp. nov.
Sternum uniform brown in colour *chumbaensis* sp. nov.
4. Anterior row of eyes slightly procurved (as seen from in front) and chelicerae strong *songosa* sp. nov.
Anterior row of eyes slightly recurved (as seen from in front) and chelicerae not strong *burasantiensis* sp. nov.

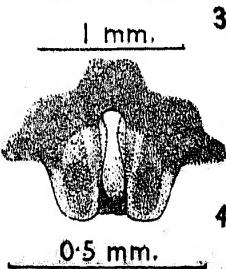
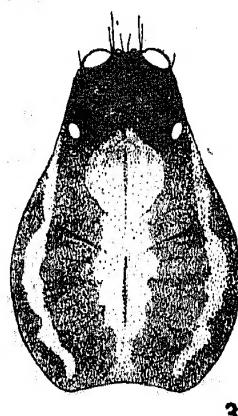
1. *Pardosa Amkhasensis* SP. NOV. (FIGURES 1-2)

GENERAL: Cephalothorax and legs greenish-brown, abdomen brown with black and white patchas. Total length 4.3 mm. Carapace 2.0 mm. long, 1.8 mm wide; abdomen 2.0 mm long, 1.5 mm wide.

CEPHALOTHORAX: Longer than wide, convex, clothed with pubescence, cephalic region almost entirely occupied by posterior two rows of eyes. Clypeus vertical. Anterior row of eyes straight and shorter than the second row, anterior medians larger than the anterior laterals. Eyes of the second row larger than the others. Ocular quad longer than wide end very slightly narrow in front. Bases of posterior eyes provided with conspicuous black patches thus making ocular area black as in figure 1. Middle of cephalothorax provided with a short fovea. Broad light brown patches extend from bases of third row of eyes to the base of cephalothorax on each side as in figure 1. Sternum heart-shaped, pointed behind, pale and provided with some spine-like hairs. Labium slightly wider than long. Distal end of maxillae wider and provided with scopulae. Chelicerae moderately strong. Legs long and thin and clothed with hairs and spines. Metatarsi IV neraly as long as or slightly longer than the tibia and patella together.



Figures 1-2. *Pardosa amkhasensis* sp. nov. 1. Dorsal view of cephalothorax, legs omitted.
2. Epigyne.



Figures 3-4. *Pardosa minutus* sp. nov. 3. Dorsal view of cephalothorax, legs omitted
4. Epigyne.

ABDOMEN: Longer than wide, oval, pointed behind, clothed with hair. Antero-mid-dorsally with a lens-shaped pale marking, followed by white patches. Dorso-laterally with black longitudinal patches on each side. Ventral side pale. Epigyne as in figure 2.

HOLOTYPE female in spirit.

TYPE-LOCALITY: Amkhas, Dist. Jabalpur, Madhya Pradesh, India. Coll. V. V. Rao, 17-9-1970.

DISCUSSION: This species resembles *Pardosa atropalpis* Gravely but differs from it as follows: (i) Ocular quad longer than wide and ocular area black but in *P. atropalpis* Gravely, ocular quad almost as long as wide and ocular area not perfectly black. (ii) Epigyne also structurally different.

2. *Pardosa Minutus* SP. NOV. (FIGURES 3-4)

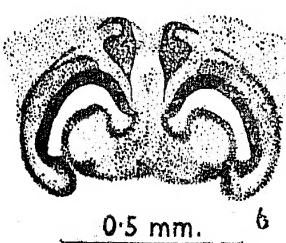
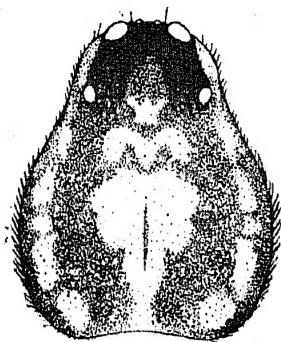
GENERAL: Cephalothorax, legs and abdomen brown. Total length 5.2 mm. Carapace 3.0 mm long, 2.0 mm wide; abdomen 2.9 mm long, 2.0 mm wide.

CEPHALOTHORAX: Longer than wide, convex, narrow in front, clothed with pubescence, cephalic region almost entirely occupied by the posterior two rows of eyes. Clypeus vertical. Anterior row of eyes slightly procurved and shorter than the second row of eyes, anterior medians larger than the anterior laterals; eyes of the second row larger than the others. Ocular quad slightly longer than wide and narrow in front, ocular area black as in figure 3. Middle of cephalothorax provided with a fovea. Longitudinal broad, brown bands extend from the bases of third row of eyes to the base of cephalothorax on each side. Lateral side of carapace also provided with longitudinal black patches as in figure 3. Sternum heart-shaped, pointed behind, provided with a conspicuous dark brown 'V'-shaped mark, clothed with hairs and spines. Labium wider than long. Distal end of maxillae wider and provided with scopulae. Chelicerae moderately strong. Legs long and thin and provided with transverse black bands, clothed with hairs and spines. Metatarsi IV as long as or slightly longer than tibia and patella together.

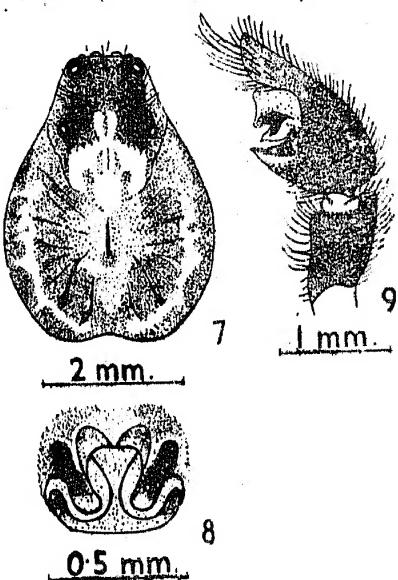
ABDOMEN: Longer than wide, oval, mid-dorsally with a light reddish patch extending to the whole length, dorso-laterally with longitudinal black patches. Ventral side pale with some small brown patches. Epigyne as in figure 4.

HOLOTYPE female, paratype one female in spirit.

TYPE-LOCALITY: Banikhet, Dist. Chamba, Himachal Pradesh, India. Coll. A. Kumar, 14-6-1974.



Figures 5-6. *Pardosa chamaensis* sp. nov. 5. Dorsal view of cephalothorax, legs omitted.
6. Epigyne.



Figures 7-9. *Pardosa songosa* sp. nov. 7. Dorsal view of cephalothorax, legs omitted.
8. Epigyne. 9. Left male palp, side view.

DISCUSSION: This species resembles *Pardosa pusiola* (Thorell) but differs from it as follows: (i) Sternum provided with a conspicuous dark brown 'V'-shaped mark but in *P. pusiola* (Thorell) sternum uniform pale. (ii) Abdomen dorso-laterally provided with longitudinal black patches but in

P. pusiola abdomen with no such patches. (iii) Epigyne also structurally different.

3. *Pardosa chambaensis* SP. NOV. (FIGURES 5-6)

GENERAL: Cephalothorax and legs dark brown, abdomen brownish black. Total length 9.5 mm. Carapace 3.5 mm long, 2.9 mm wide; abdomen 5.5 mm long, 3.0 mm wide.

CEPHALOTHORAX: Longer than wide, convex, clothed with pubescence, cephalic region slightly high. Clypeus vertical. Anterior row of eyes straight and shorter than the second row of eyes; anterior medians larger than the anterior laterals. Eyes of the second row larger than the others. Ocular quad wider than long and narrower in front than behind as in figure 5. Bases of posterior eyes provided with conspicuous black patches. Middle of cephalothorax provided with a sharp fovea. Dark brown, thick longitudinal bands extend from bases of third row of eyes to the base of cephalothorax. Lateral edges of carapace also provided with longitudinal dark brown band as in figure 5. Sternum heart-shaped, pointed behind, uniform brown and covered with pubescence. Labium wider than long. Distal end of maxillae wider and provided with scopulae. Chelicerae moderately strong. Retromargin of chelicerae with three teeth. Legs long, moderately strong and provided with brownish green transverse bands. Metatarsi IV nearly as long as or slightly longer than the tibia and patella together.

ABDOMEN: Longer than wide, pointed behind, antero-mid-dorsally with a lens-shaped marking followed by few pale patches. Ventral side pale. Epigyne as in figure 6.

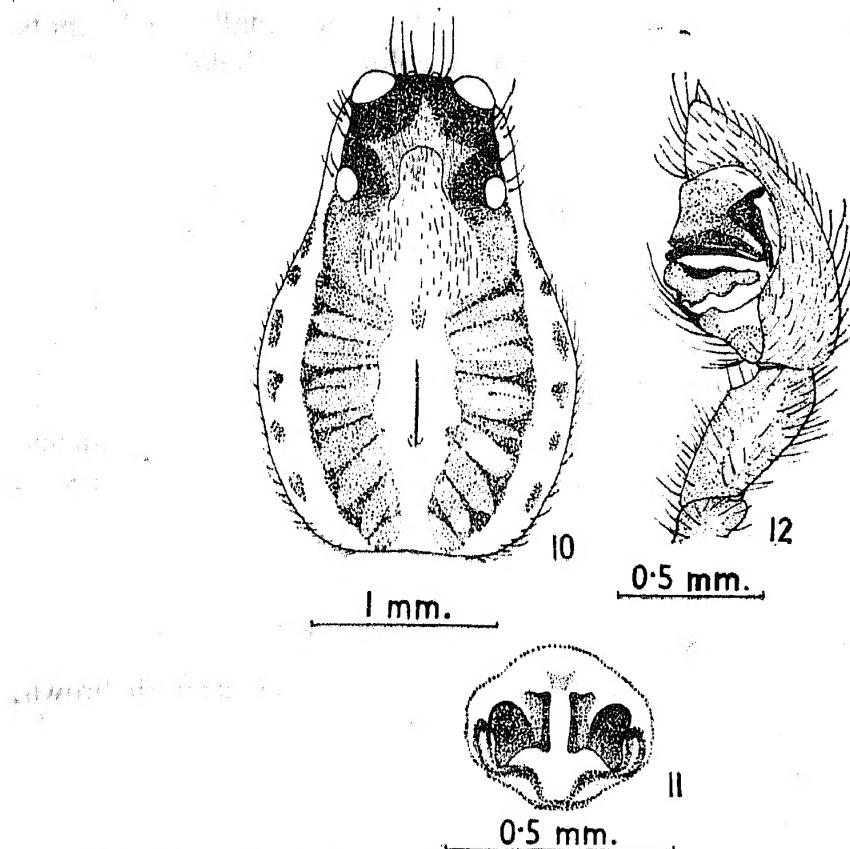
HOLOTYPE female, paratype one female in spirit.

TYPE-LOCALITY: Banikhet, Dist. Chamba, Himachal Pradesh, India. Coll. A. Kumar, 14-6-1974.

DISCUSSION: This species resembles *Pardosa timida* (Simon) but differs from it as follows: (i) Sternum uniform brown in colour but in *P. timida* (Simon) sternum uniform pale. (ii) Abdomen with a lens-shaped marking antero-mid-dorsally but in *P. timida* abdomen with white chevrons mid-dorsally. (iii) Epigyne also structurally different.

4. *Pardosa songosa* SP. NOV. (FIGURES 7-9)

GENERAL: Cephalothorax and abdomen brown, legs brownish green. Total length 9.2 mm. Carapace 4.0 mm long, 3.0 mm wide; abdomen 5.0 mm long, 3.5 mm wide.



Figures 10-12. *Pardosa burasantiensis* sp. nov. 10. Dorsal view of cephalothorax, legs omitted
11. Epigyne. 12. Left male-palp, side view.

CEPHALOTHORAX: Longer than wide, convex, clothed with fine hairs. Cephalic region high and narrow, the posterior four eyes occupy almost entire cephalic region. Clypeus vertical. Cephalothorax deep brown and middle provided with fine fovea, surrounded by pale markings as in figure 7. Lateral sides with brown patches and some gaps of pale patches. Anterior row of eyes slightly procurved (as seen from in front) and much shorter than the second row, anterior medians slightly larger than the anterior laterals. Second row of eyes larger than the others. Ocular quad as long as wide as in figure 7. Sternum heart-shaped, pointed behind, clothed with fine hairs and spine-like hairs and with a 'V'-shaped black mark. Labium nearly as long as wide. Distal end of maxillae wider and provided with scopulae. Chelicerae moderately strong and retromargin provided with three teeth. Legs long, thin, clothed with spines and hairs and banded with transverse brown patches. Metatarsi I provided with three pairs of ventral spines and apical spines very short. Metatarsi IV nearly as long as or slightly longer than tibia and patella together. Male palp as in figure 9.

ABDOMEN: Longer than wide, narrowing behind, clothed with fine hairs and some spine-like hairs. Posterior half provided dorsally with

chevron-like pattern. Ventral side pale with some small black spots. Epigyne as in figure 8. Male also of similar colour but slightly smaller in size than female.

HOLOTYPE female, **paratype** two females, **allotype** two males in spirit.

TYPE-LOCALITY: Bank of Song river, Kansro, Dist. Dehra Dun, U.P., India. Coll. R. N. Chopra, 22-2-1972. **Paratype:** Dhalkhand Forest, Dist. Saharanpur, U.P., India. Coll. Raj Tilak, 27-4-1973. **Allotype:** Mussoorie, Dist. Dehra Dun, U.P., India. Coll. J. C. Tripathi, 3-12-1971.

DISCUSSION: This species resembles *Pardosa leucopalpis* Gravely but differs from it as follows: (i) Legs are banded with transverse brown patches, whereas in *P. leucopalpis* Gravely, legs are uniform pale in colour. (ii) Sternum with black 'V'-shaped mark, but in *P. leucopalpis* Gravely, sternum with no such mark. (iii) Epigyne also structurally different.

5. *Pardosa Burasantiensis* SP. NOV. (FIGURES 10-12)

GENERAL: Cephalothorax yellowish brown, abdomen greenish brown. Legs pale with greenish brown transverse bands. Total length 6.00 mm. Carapace 2.6 mm long, 2.00 mm wide; abdomen 3.00 mm long, 2.00 mm wide.

CEPHALOTHORAX: Longer than wide, convex, clothed with pubescence. Cephalic region slightly high. Clypeus vertical. Anterior row of eyes slightly recurved and anterior medians larger than the anterior laterals. Eyes of the second row largest. Ocular quad slightly wider than long and narrow in front. Bases of posterior eyes provided with conspicuous black patches as in figure 10. Middle of cephalothorax provided with a conspicuous short fovea. Two longitudinal brown patches extend from the base of third row of eyes up to the base of cephalothorax as in figure 10. Sternum heart-shaped, pointed behind, pale and provided with few spines. Labium wider than long. Distal end of maxillae provided with scopulae. Chelicerae moderately strong and ratiomargin of chelicerae provided with three teeth. Legs long and thin, provided with conspicuous light greenish brown transverse bands. Male slightly smaller than female but of same colour. Male palp as in figure 12.

ABDOMEN: Longer than wide, oval, pointed behind, dorsally provided with irregular greenish brown patches. Ventral side pale. Epigyne as in figure 11.

HOLOTYPE female, **paratype** one female, **allotype** two males in spirit.

TYPE-LOCALITY: Burasanti, Singur, West-Bengal, India. Coll. J. R. Oppenheimer, 23-6-1972.

DISCUSSION: This species resembles *Pardosa oakleyi* Gravely but differs from it as follows: (i) Anterior row of eyes slightly recurved but in *P. oakleyi* anterior row of eyes straight. (ii) Ocular quad is wider than long but in *P. oakleyi* ocular quad is as long as wide. (iii) Epigyne also structurally different.

ACKNOWLEDGEMENTS

The authors are thankful to Dr. B. S. Lamba, Deputy Director, Northern Regional Station, Dehra Dun, Dr. H. Khajuria, Superintending Zoologist, Central Regional Station, Jabalpur and Dr. Arun Kumar, Zoologist, High Altitude Zoology Field Station, Solan, Zoological Survey of India, for supplying the spider collection for our study.

REFERENCES

1. Simon, E., *Hist. Nat. des Araignees, Paris* **2** 317-365 (1897).
2. Simon, E., *Arach. de. Java, Mt. Mus. Humburg.* **22** 51-73 (1905).
3. Pocock, R. I., *Fauna of British India, Arachnida*, London (1900).
4. Gravely, F. H., Some Indian spiders of the family Lycosidae. *Rec. Indian Mus.* **26** 587-613 (1924).
5. Sinha, T. B., On the collection of Lycosid spiders in the Zoological Survey of India (Indian Museum) with critical notes on the species. *Rec. Indian Mus.* **48** (2) 9-52 (1951).
6. Tikader, B. K., Spider fauna of Sikkim. *Rec. Zool. Surv. India* **64** (1-4) 63 (1970).
7. Tikader, B. K. and Mukerjee, S. A new species of spider of the genus *Lycosa* (Family: Lycosidae) from India. *Sci. and Cult.* **37** 531 (1971).
8. Tikader, B. K., Zoological results of the Indian Cho-Oyu Expedition (1958) in Nepal, Part 8, *Rec. Indian Mus.* **59** (3) 257-267 (1964).

Statement about ownership and other particulars about
"Proceedings of the Indian Academy of Sciences"

Section B

1. Place of Publication .. Bangalore
2. Periodicity of Publication .. Monthly
3. Printer's Name .. S. Ramaseshan, Indian Academy of Sciences,
Bangalore 560006
4. & 5. Publisher and Editor .. S. Ramaseshan
6. Nationality .. Indian
7. Address .. Indian Academy of Sciences, Bangalore 560006
8. Name and Address of the .. Indian Academy of Sciences, Bangalore 560006
Owner

I, S. Ramaseshan, hereby declare that the particulars given above are true
to the best of my knowledge.

S. RAMASESHAN

Dated 1st March 1976

Signature of Publisher